



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
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JUN 9 1999

MEMORANDUM

SUBJECT: National Remedy Review Board Recommendations for the Tex Tin Superfund Site, Operable Unit No. 1

FROM: *Myron O. Knudson*
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TO: Bruce K. Means, Chairman
National Remedy Review Board (5202G)

Listed below are U.S. Environmental Protection Agency (EPA) Region 6 responses to recommendations and comments by the National Remedy Review Board (NRRB) regarding the Tex Tin Superfund Site (site). Region 6 appreciates the NRRB's recommendations and patience in receiving the responses. Differences between EPA and the Texas Natural Resource Conservation Commission (TNRCC) have been resolved, and, by letter dated May 4, 1999, the TNRCC agreed with EPA's preferred remedy. As a result, the Regional Administrator signed the Record of Decision on May 17, 1999. We believe that the NRRB's recommendations were very useful in determining the final remedy selection for the site.

NRRB ADVISORY RECOMMENDATIONS:

Recommendation:

Based on the information provided, the groundwater at the site appears to be a potential drinking water source under EPA guidelines. However, the proposed groundwater remedy (monitoring) appears to be inconsistent with the Agency's groundwater protection strategy and the National Contingency Plan's (NCP's) expectation that groundwater be restored for beneficial use (NCP Preamble, Vol.55, No.46, March 8, 1990; 40 CFR Part 300, p.8733). The NRRB recommends that the Region address the Agency strategy and NCP expectation in its proposed alternatives. In addition, soil cleanup goals should address any potential threat to groundwater from the leaching of soil contaminants.

EPA Region 6 Response:

The State (TNRCC) and EPA agreed to monitor the shallow, medium, and deep transmissive zones as the alternative for the site ground water with options to re-evaluate the ground water if monitoring standards are exceeded. The shallow and medium transmissive zone trigger standards are based on alternate concentration levels (ACLs) for industrial ground water use. The levels for the deep transmissive ground water zone will be based on Maximum Contaminant Levels (MCLs) since wells within a four (4) mile radius in this zone are used for drinking water. The basis for the shallow and medium transmissive zones is determined by the potential surrounding ground water

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use for these two zones. Currently, there are no industrial or drinking water wells located downgradient from the site. The area immediately down gradient from the site consists of ponds, the hurricane levee, the Swan Lake salt marsh area, and Swan Lake. The potential for development in the downgradient area is very unlikely, and the potential for placement of wells in the shallow, medium, or deep transmissive zones is extremely unlikely in the foreseeable future. Therefore, the use of ACLs for the site meets the NCP criteria for use of alternative concentration levels that specify that no ACLs can be used “if the process assumes a point of human exposure beyond the boundary of the facility.” Additionally, deed restrictions for the installation of onsite groundwater wells will be required as part of implementing the remedial action.

The potential leaching of soil contaminants is addressed in the selected remedy for the site which requires stabilization of soils, sediments, and hazardous materials that exceed the Synthetic Precipitation Leaching Procedure (SPLP) concentrations based on MCLs. This will ensure that no contaminants above MCLs leach to the ground water.

Recommendation:

The Region should clarify the rationale for the proposed remediation goals at the site and how they were determined in the context of the NCP’s “point of departure” provisions (NCP Section 300.430(e)(9)).

EPA Region 6 Response: Except for lead, the risk based preliminary remediation goals (PRGs) were calculated based on cleanup levels that fall within EPA’s acceptable human health risk levels for an industrial setting and are consistent with the Texas Risk Reduction Rules and the NCP. The risk based industrial PRG for arsenic was calculated at 194 mg/kg or parts per million (ppm). The point of departure ($1\text{E-}6$) concentration for arsenic would be less than background level. The selected cleanup level for arsenic falls between the industrial risk based level of $1\text{E-}5$ and $1\text{E-}4$. The selected concentration is consistent with arsenic industrial cleanup levels at other Superfund sites and is consistent with the NCP of making risk management decisions that fall within a risk level of $1\text{E-}6$ and $1\text{E-}4$. The lead PRG of 2,000 ppm was based on the Bower’s model for adult lead exposure at an industrial setting. Since the other metal contaminants of concern do not have a cancer slope factor, their PRGs were based on a concentration level that would not exceed the hazard index quotient of one (1) for an industrial land use. The hazard quotient represents a level at which there may be concern for potential non-cancer effects from lifetime exposure to contaminants.

Consistent with the NCP, EPA’s remedial action objectives (RAOs) are intended to address contaminated media that, based on the results of the human health baseline risk assessment, pose an unacceptable level of risk (outside of the 1×10^{-4} to 1×10^{-6} risk range). Starting with 1×10^{-6} as the initial point of departure, General Response Actions (GRAs) are evaluated that, when implemented, will result in reduction of risk to within a 1×10^{-4} to 1×10^{-6} risk level.

For arsenic, additional factors are evaluated. Arsenic concentrations attributed to background conditions exceed a 1×10^{-6} risk level. At the 1×10^{-5} risk level, volumes of affected soil and

associated costs for remediation are prohibitively large and expensive (an additional 146,000 cubic yards of soil). Consequently, alternatives evaluated to address arsenic-contaminated soils use 10^{-4} as the quantitative RAO. This risk level is consistent with the NCP, and recognizes that background arsenic concentrations at Tex Tin generally fall within or exceed the 10^{-5} to 10^{-6} risk levels.

Recommendation:

The proposed plan indicates that inorganic contaminants pose a potential ecological threat to receptors at the Tex Tin site. The Region should clarify how this threat is addressed by the proposed response action alternatives and their associated remediation goals.

EPA Region 6 Response: As part of the Feasibility Study, an “Ecological Risk Evaluation of Tex Tin Site Assuming Remedy Conditions” was conducted to determine potential impacts to ecological receptors after implementing a general site remedy. The evaluation of future soil characteristics indicates that terrestrial receptor risk is minimal since many of the current exposure pathways will be effectively severed by the placement of a clean soil cap. Results of the dietary exposure evaluation indicate that food chain transfer and chemical accumulation will be minimal and will not cause adverse effects to exposed receptors. Results of the offsite evaluation indicate that the offsite ponds in their current state are not a source of risk to receptors that would forage the area. However, to further evaluate the offsite ponds and the potential for future impacts to these ponds from site contaminants, ponds 22 through 25 have been removed from Operable Unit No. 1 (OU No. 1) and will be included with the Swan Lake Salt Marsh area, OU No. 4.

There is a high probability that the site will be redeveloped for industrial or commercial purposes as soon as cleanup activities are completed. Therefore, the site will not be a good source for future ecological habitat.

Recommendation:

The information provided does not fully explain how the Region plans to deal with naturally occurring radioactive materials (NORM slag) in surface soils and low level radioactive waste buried on site. The Region should clearly explain, both from a risk assessment and waste management perspective, how radiological threats are addressed at this site.

EPA Region 6 Response: Radioactive risk will be addressed per OSWER No. 9200.4-18, “Establishment of cleanup levels for CERCLA sites with radioactive contamination” which sets an effective dose equivalent level of 15 millirems (mrem) per year as an acceptable dose. The NORM slag will be stabilized to address the inorganic contaminants and disposed on site. The disposal landfill and clay cap will be designed to meet the dosage concentration standard not to exceed 15 mrem per year. Radioactive cleanup criteria for the site will also be based on Directive No. 9200.4-25, “Use of Soil Cleanup Criteria in 40 CFR Part 192 as Remediation Goals for CERCLA sites.” The health based standard for surface soil is 5 picocuries/gram (pCi/g) of radium-226.

The Tex Tin site has an average radiation concentration of less than 20 pCi/g as compared to the Denver Radium site which had an average concentration of 90 pCi/g radiation in building and process areas and an average concentration of 69 pCi/g in open areas. Soils and sediments at Tex Tin averaged less than 5 pCi/g. Average waste concentrations at Monticello ranged from 590 to 879 pCi/g of radium-226 in various tailings piles.

The selected remedy for the NORM materials is consistent with the remedy employed at the Denver Radium and Monticello sites, in which the naturally-occurring radioactive material (NORM) is collected and capped. The selected remedy addresses radiation risk by preventing external radiation exposure and preventing direct contact, ingestion, and inhalation of soils and slag piles that contain radium-226 material that exceed 40 CFR Part 192 criteria and meet the dosage concentration standards of OSWER No. 9200.4-18.

The Texas Department of Health monitored the Low-Level Radioactive Landfill from 1978 through 1996. Monitoring results indicated that the Landfill radiation levels were below the limits of the Texas Regulations for Control of Radiation. Visual inspections indicate the potential for surface water ponding on the Landfill cap. Therefore, to upgrade the existing cover over the Low-Level Radioactive Landfill and prevent ponding, a two-foot compacted clay cover will be placed over the landfill as part of the selected soil alternative for the site.

Recommendation:

The Region should reconcile the State of Texas regulations for disposal of NORM materials with the preferred alternatives involving onsite disposal.

EPA Region 6 Response: The EPA's selected remedy meets the State's requirements for disposal of NORM materials. The EPA met with TNRCC's Radiation Department to discuss the State's criteria for NORM waste disposal and other requirements. The State's requirements are based on meeting a dosage concentration level at the fence line. The State's acceptable dosage concentration levels are not more stringent than EPA's standards for cleanup of radioactive waste materials at Superfund sites.

The Texas Regulations for Control of Radiation specify that NORM wastes are exempt from regulation if they are "30 picocuries/gram or less of technologically enhanced radium-226 or radium-228 in soil, averaged over any 100 square meters and averaged over the first 15 centimeters of soil below the surface, provided the radon emanation rate is less than 20 picocuries per square meter per second" (TRCR Part 46.4(a)(1)(i)(a); 25 TAC 289.127(a)). This criteria is not more stringent than EPA's requirements.

Recommendation:

The proposed action relies directly on the Toxicity Characteristic Leaching Procedure (TCLP) to identify soils and sediments to be treated as “principal threats.” The TCLP is a test for determining whether a waste is a “characteristic” hazardous waste under RCRA. It often does not reliably predict the potential mobility of soil contaminants under the variety of conditions found at Superfund sites. In particular, given the site contaminants at Tex Tin, the Region’s use of TCLP to determine principal threats may result in an excessive amount of material being treated. The Region should develop a site-specific rationale for identifying principal threat wastes at Tex Tin in the context of the NCP (40 CFR Section 300.430(a)(1)(iii)) and related guidance (e.g., A Guide to Principal Threat and Low Level Threat Wastes, Superfund Publication: 9380.3-06FS).

EPA Region 6 Response: The EPA Region 6 used site specific information and the referenced guide to determine principal and low level threat waste materials for the site. Some materials proposed for stabilization for protection of ground water were inadvertently included, in the list of materials treated as “principal threats.” Although TCLP is used for determining whether a waste material is a “characteristic” hazardous waste under RCRA, it is also a testing method typically used to determine the potential for leaching of contaminants to the ground water. Additionally, the referenced guide states that materials may be treated (in our case stabilized) on a site-by-site basis, even if they do not pose a principal threat. We are no longer considering the use of the TCLP test for determining which materials need to be stabilized to protect the ground water. In discussions with the State (TNRCC), it was agreed that the Synthetic Precipitation Leaching Procedure (SPLP) test would be used to determine which materials would be stabilized for protection of ground water. The TCLP test will still be used for offsite disposal to determine if contaminated materials are RCRA hazardous waste.

Recommendation:

Before issuing the proposed plan, the Region should reach agreement with TNRCC regarding the appropriate classification and use of the on-site injection well.

EPA Region 6 Response: In discussions with TNRCC, EPA and the State have agreed that, if the on-site well is used for underground injection of hazardous materials, it would be classified as a Class 1 well. Under this scenario, if the site well is used for underground injection, a waiver under a no-migration petition would have to be approved before this option is used.

Recommendation:

If the underground-injection based alternative is proposed, the Region should better justify its cost effectiveness, because the costs of this proposal are greater than similarly protective alternatives.

EPA Region 6 Response: The EPA did not include the underground injection alternative as one of the preferred alternative for the site. However, the underground injection alternative, along with other alternatives, was included in the Proposed Plan to solicit comments from the public before a final determination was made. The selected remedial action for the site does not include underground injection.

Recommendation:

The Region should clarify the rationale for proposing alternative “BLD 3” (decontamination and demolition of the buildings) over alternative “BLD 2” (building decontamination), to justify the incremental cost of approximately \$7.0 million.

EPA Region 6 Response: We believe that alternative BLD 3 offers the best long-term protection for the site in comparison with alternative BLD 2. As is presently evident, building deterioration will continue and release of residual contaminants could occur in the future. Additionally, continued building deterioration could pose a physical hazard for future on-site workers and impede evacuation from Texas City in case of a hurricane. Adjacent Highways 146 and 519 are designated as hurricane evacuation routes for Texas City. In selecting building demolition alternative (BLD 3), EPA will be using the following criteria during the remedial design to determine which site building will be demolished to prevent a potential future release of hazardous substances:

- there are no long-term building maintenance plans to prevent building deterioration, and continued building deterioration may cause a release of a hazardous substance;
- the building cannot be safely decontaminated;
- the building components are so contaminated that decontamination is impractical; and,
- building demolition is necessary to facilitate implementing other components.